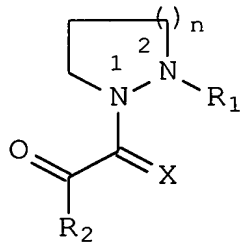
WE CLAIM:

1. A compound of formula I

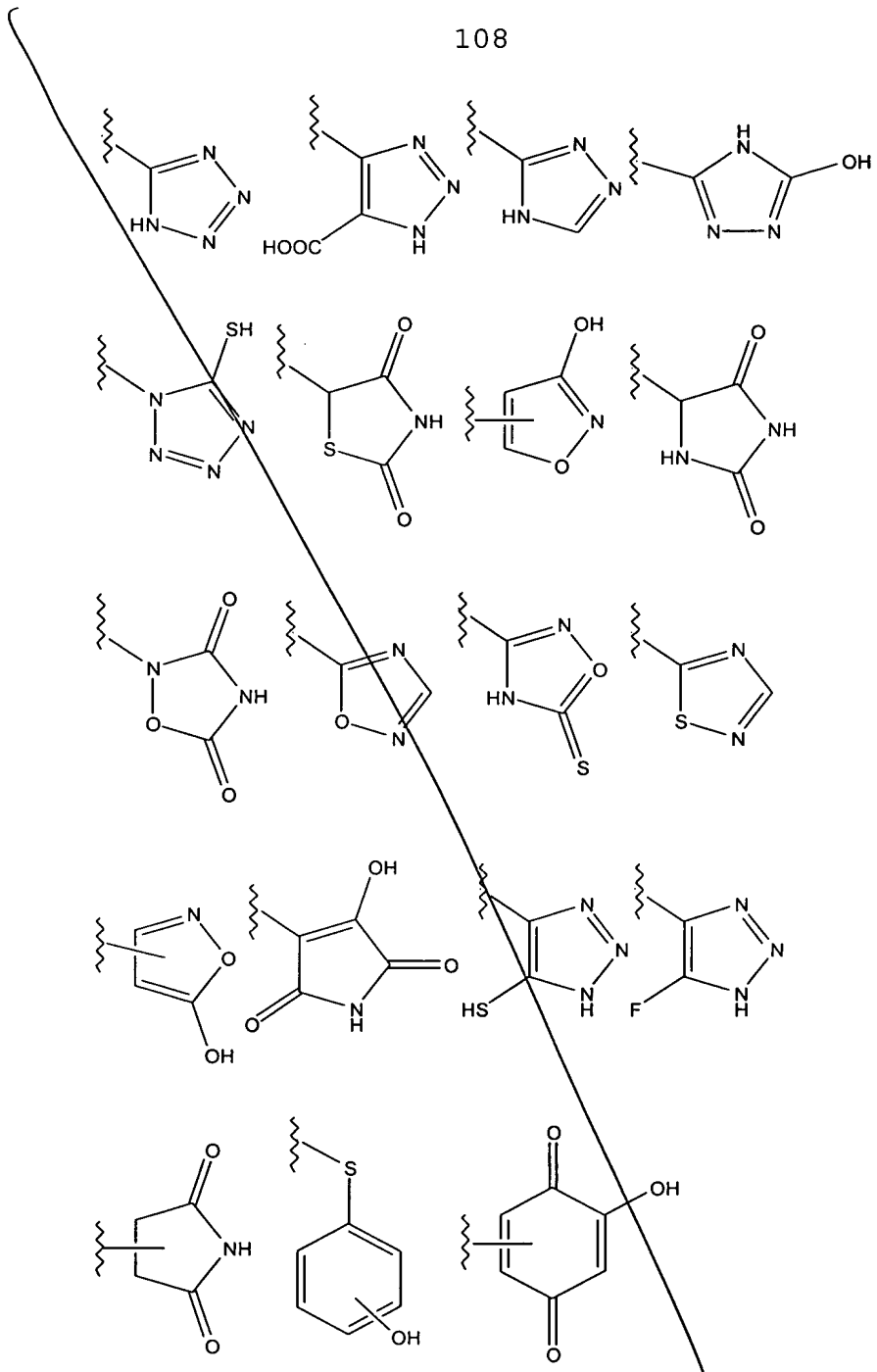


I

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R_2 is selected from the group consisting of hydrogen, C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, aryl,

heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is unsubstituted on substituted with one or more substituents selected from R_3;

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group; and

X is O or S.

2. The compound of claim 1, wherein the compound is non-immunosuppressive.

3. The compound of claim 1, wherein said compound is selected from the group consisting of:

3,3-dimethyl-N-[2-(5-phenylpentanoyl)-tetrahydro-1H-1-pyrazolyl]-1,2-pentanedione;

3,3-dimethyl-N-[2-(3-phenylpropanoyl)tetrahydro-1H-1-pyrazolyl]-1,2-pentanedione;

3,3-dimethyl-1-[2-(5-(3-pyridyl)pent-4-ynoyl)-pyrazolidinyl]pentane-1,2-dione;

3,3-dimethyl-1-[2-(5-(cyano)pent-4-ynoyl)pyrazolidinyl]-pentane-1,2-dione;

Sub C1

3,3-dimethyl-1-[2-(4-phenylbutanoyl)pyrazolidinyl]-pentane-1,2-dione;

3,3-dimethyl-1-[2-(6-phenylhexanoyl)pyrazolidinyl]-pentane-1,2-dione;

3,3-dimethyl-1-[2-(5-(3-pyridyl)pentanoyl)-pyrazolidinyl]pentane-1,2-dione;

3-phenylpropyl 2-(3,3-dimethyl-2-oxopentanoyl)-pyrazolidinecarboxylate;

3-(3-pyridyl)propyl 2-(3,3-dimethyl-2-oxopentanoyl)pyrazolidinecarboxylate;

4-phenylbutyl 2-(3,3-dimethyl-2-oxopentanoyl)-pyrazolidinecarboxylate;

2-phenylethyl 2-(3,3-dimethyl-2-oxopentanoyl)-pyrazolidinecarboxylate;

3,3-dimethyl-1-[2-(6-phenylhexanoyl)perhydro-pyridazinyl]pentane-1,2-dione;

3,3-dimethyl-1-[2-(6-(3-pyridyl)hexanoyl)-perhydropyridazinyl]pentane-1,2-dione;

3-phenylpropyl 2-(3,3-dimethyl-2-oxopentanoyl)-perhydropyridazinecarboxylate;

4-phenylbutyl 2-(3,3-dimethyl-2-oxopentanoyl)perhydropyridazinecarboxylate;

5-phenylpentyl 2-(3,3-dimethyl-2-oxopentanoyl)-perhydropyridazinecarboxylate;

Sub C1

4-(3-pyridyl)butyl 2-(3,3-dimethy-2-oxopentanoyl)-perhydropyridazinecarboxylate;

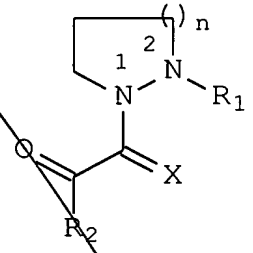
3,3-dimethyl-1-[2-({5-phenyl}pentanoyl)perhydro-pyridazinyl]pentane-1,2-dione; and

pharmaceutically acceptable salts, esters and solvates thereof.

4. A pharmaceutical composition comprising:

(i) a therapeutically effective amount of a compound of formula I:

Sub A2

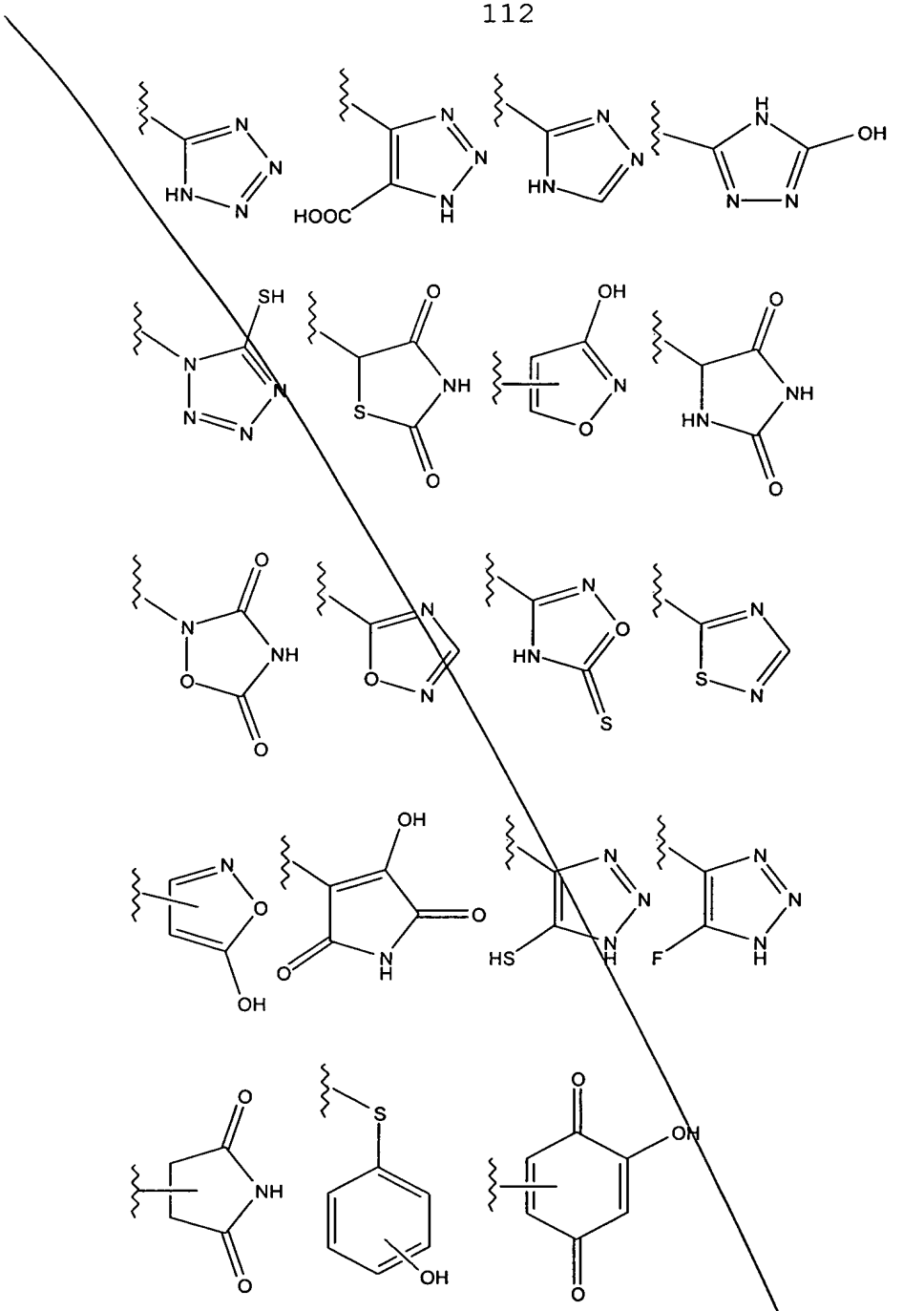


I

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R_2 is selected from the group consisting of hydrogen, C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, aryl,

heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is unsubstituted on substituted with one or more substituents selected from R_3;

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group; and

X is O or S; and

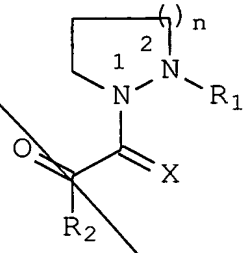
(ii) a pharmaceutically acceptable carrier.

5. The pharmaceutical composition of claim 4, further comprising an additional neurotrophic factor.

6. The pharmaceutical composition of claim 5, wherein the additional neurotrophic factor is selected from the group consisting of neurotrophic growth factor, brain derived growth factor, glial derived growth factor, cilial neutrophic factor,

insulin growth factor, acidic fibroblast growth factor, basic fibroblast growth factor, platelet-derived growth factor, neurotropin-3, neurotropin-4 and neurotropin-5.

7. A method for effecting a neuronal activity in a mammal, comprising administering to the mammal an effective amount of a compound of formula I:

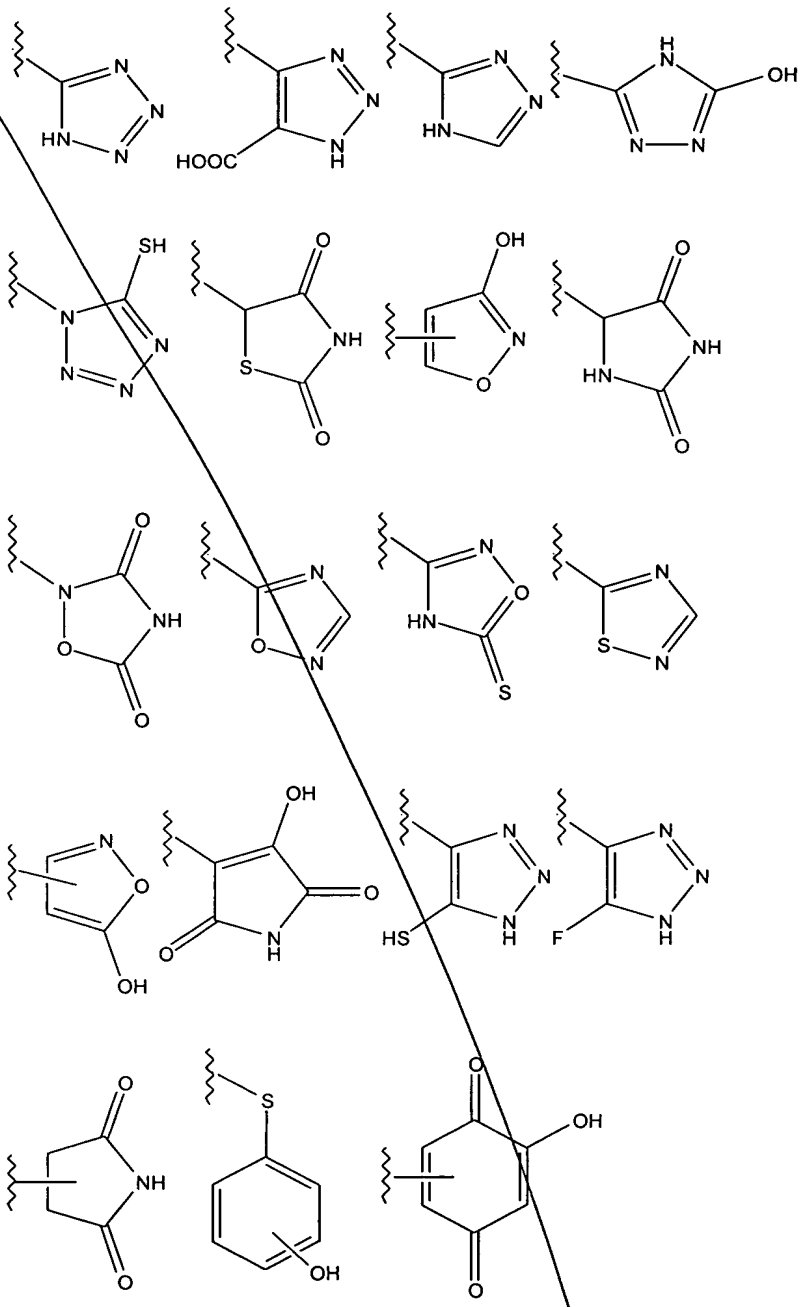


I

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R_2 is selected from the group consisting of hydrogen, C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, aryl,

heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is unsubstituted on substituted with one or more substituents selected from R_3;

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group; and

X is O or S.

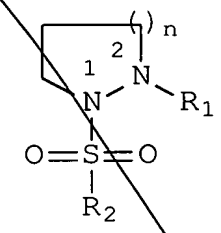
8. The method of claim 7, wherein the neuronal activity is selected from the group consisting of stimulation of damaged neurons, promotion of neuronal regeneration, prevention of neurodegeneration, and treatment of a neurological disorder.

9. The method of claim 8, wherein the neurological disorder is selected from the group consisting of peripheral

neuropathy caused by physical injury or disease state, traumatic injury to the brain, physical damage to the spinal cord, stroke associated with brain damage, and a neurological disorder relating to neurodegeneration.

10. The method of claim 11, wherein the neurological disorder relating to neurodegeneration is selected from the group consisting of Alzheimer's disease, Parkinson's disease, Huntington's disease, and amyotrophic lateral sclerosis.

11. A compound of formula II:



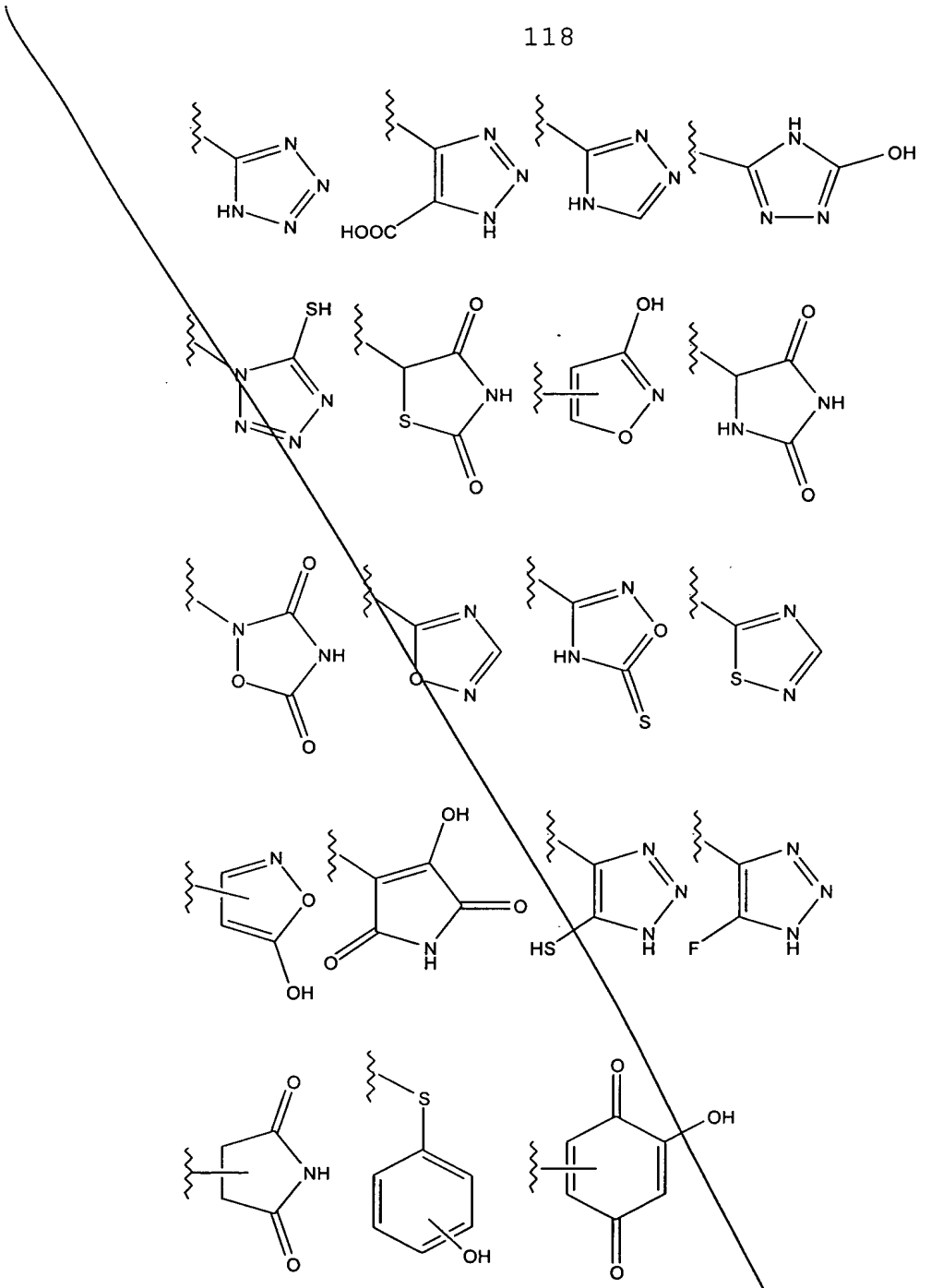
II

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,

Sub A4



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R_2 is selected from the group consisting of hydrogen, C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, aryl,

Sub A4

heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is unsubstituted or substituted with one or more substituents selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group.

12. The compound of claim 11, wherein the compound is non-immunosuppressive.

Sub C1

13. The compound of claim 11, which is selected from the group consisting of:

3-phenylpropyl 2-[benzylsulfonyl]pyrazolidine-carboxylate;

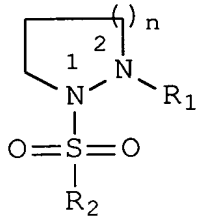
4-phenylbutyl 2-[benzylsulfonyl]perhydropyridazine-carboxylate;

1-(5-phenylpentanoyl)-2-(benzylsulfonyl)tetrahydro-1H-1-pyrazole; and

pharmaceutically acceptable salts, esters and solvates thereof.

14. A pharmaceutical composition comprising:

(i) a therapeutically effective amount of a compound of formula II:

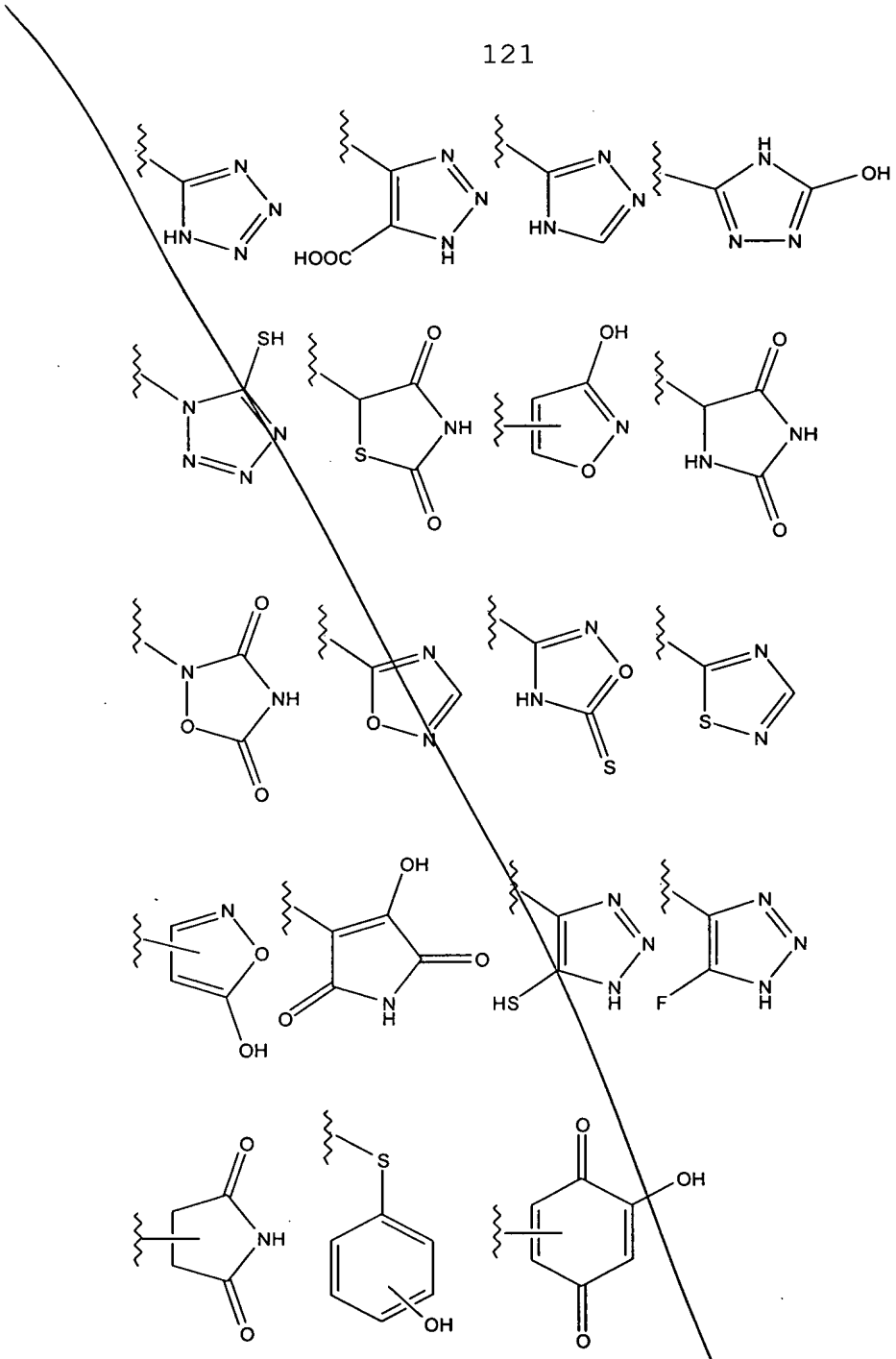


II

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R_2 is selected from the group consisting of hydrogen, C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, aryl,

heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is unsubstituted or substituted with one or more substituents selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group; and

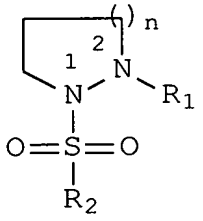
(ii) a pharmaceutically acceptable carrier.

15. The pharmaceutical composition of claim 14, further comprising an additional neurotrophic factor.

16. The pharmaceutical composition of claim 15, wherein the additional neurotrophic factor is selected from the group consisting of neurotrophic growth factor, brain derived growth factor, glial derived growth factor, cilial neutrophic factor, insulin growth factor, acidic fibroblast growth factor, basic

fibroblast growth factor, platelet-derived growth factor, neurotropin-3, neurotropin-4 and neurotropin-5.

17. A method for effecting a neuronal activity in a mammal, comprising administering to the mammal an effective amount of a compound of formula II:

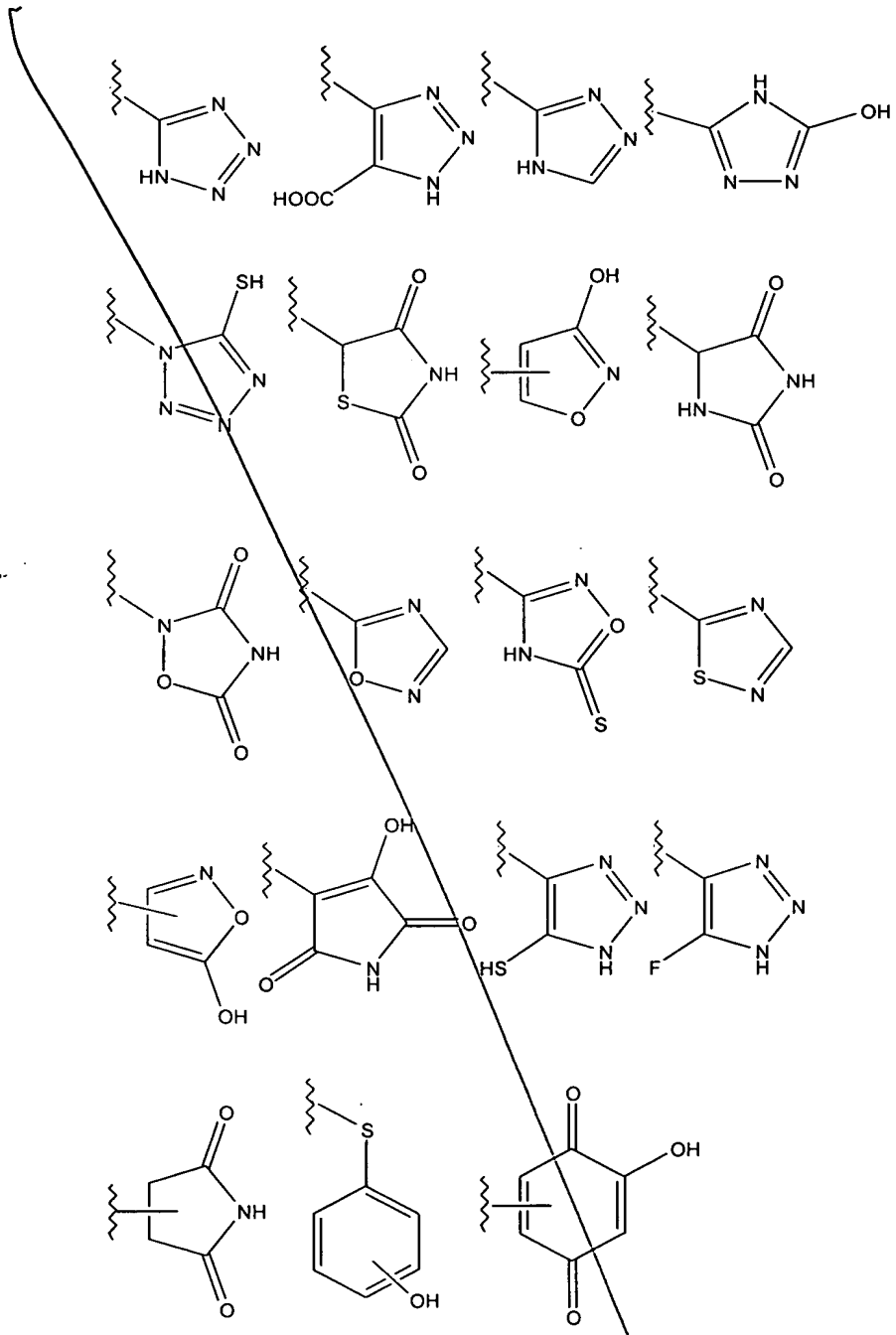


II

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R_2 is selected from the group consisting of hydrogen, C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, aryl,

heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is unsubstituted or substituted with one or more substituents selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group.

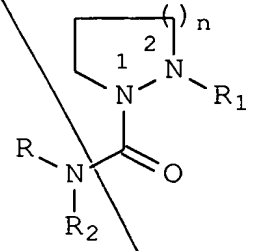
18. The method of claim 17, wherein the neuronal activity is selected from the group consisting of stimulation of damaged neurons, promotion of neuronal regeneration, prevention of neurodegeneration, and treatment of a neurological disorder.

19. The method of claim 18, wherein the neurological disorder is selected from the group consisting of peripheral neuropathy caused by physical injury or disease state,

traumatic injury to the brain, physical damage to the spinal cord, stroke associated with brain damage, and a neurological disorder relating to neurodegeneration.

20. The method of claim 19, wherein the neurological disorder relating to neurodegeneration is selected from the group consisting of Alzheimer's disease, Parkinson's disease, Huntington's disease, and amyotrophic lateral sclerosis.

21. A compound of formula III:

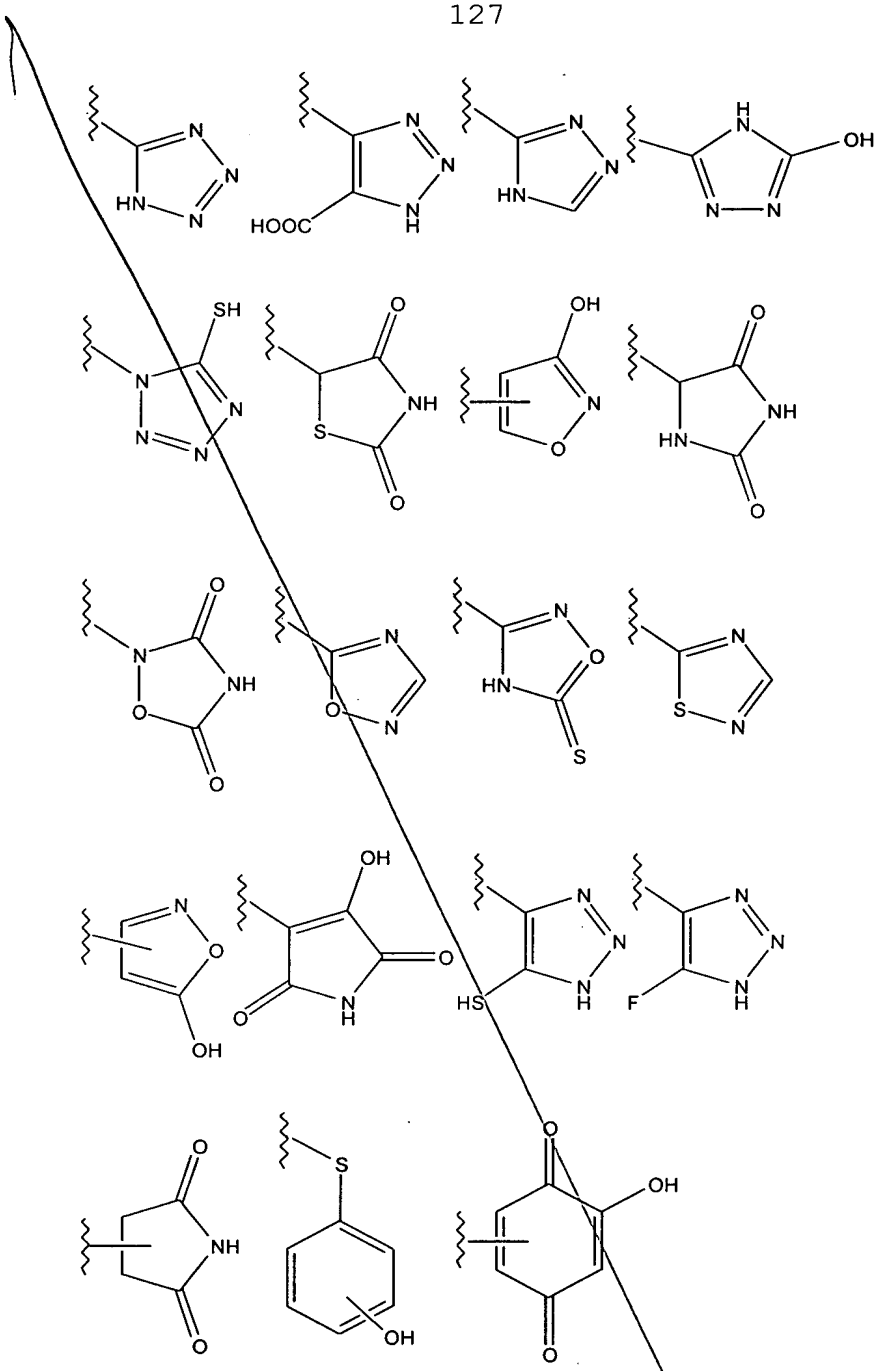


III

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R and R_2 are independently C_1-C_9 alkyl, C_2-C_9 alkenyl, aryl, heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, aryl, heteroaryl, carbocycle, or heterocycle

is unsubstituted or substituted with one or more substituent(s) selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group.

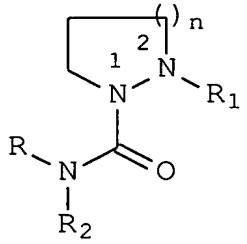
22. The compound of claim 21, wherein the compound is non-immunosuppressive.

23. The compound of claim 21, wherein said compound is 1-(5-phenylpentanoyl)-2-(N,N-dicyclohexylcarbamoyl)-tetrahydro-1H-1-pyrazole or a pharmaceutically acceptable salt, ester or solvate thereof.

24. A pharmaceutical composition comprising:

(i) a therapeutically effective amount of a compound of

formula III:

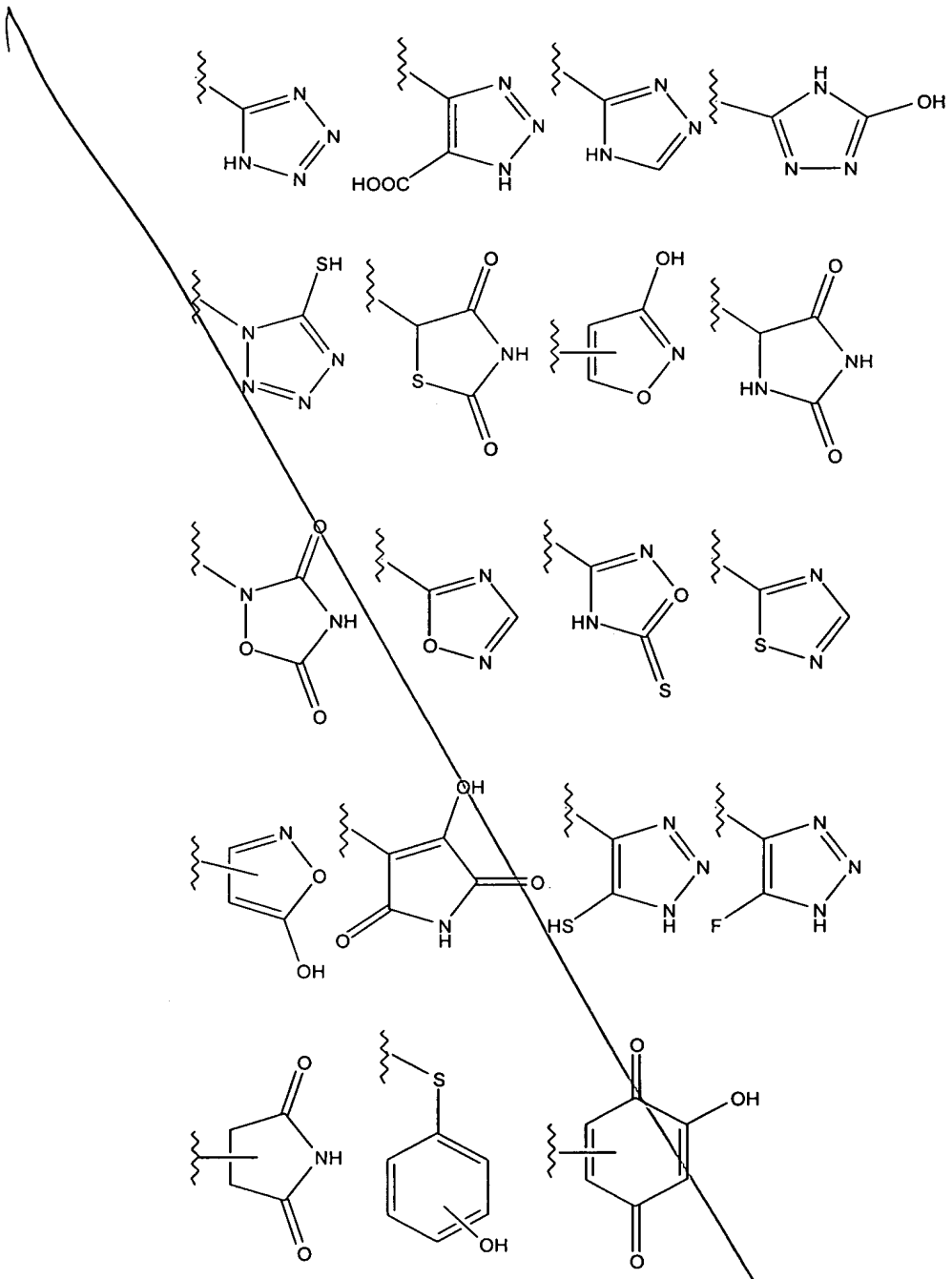


III

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R and R_2 are independently C_1-C_9 alkyl, C_2-C_9 alkenyl, aryl, heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, aryl, heteroaryl, carbocycle, or heterocycle

is unsubstituted or substituted with one or more substituent(s) selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group; and

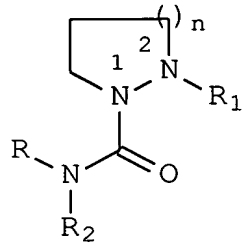
(ii) a pharmaceutically acceptable carrier.

25. The pharmaceutical composition of claim 24, further comprising an additional neurotrophic factor.

26. The pharmaceutical composition of claim 25, wherein the additional neurotrophic factor is selected from the group consisting of neurotrophic growth factor, brain derived growth factor, glial derived growth factor, cilial neutrophic factor, insulin growth factor, acidic fibroblast growth factor, basic fibroblast growth factor, platelet-derived growth factor, neurotropin-3, neurotropin-4 and neurotropin-5.

27. A method for effecting a neuronal activity in a mammal, comprising administering to the mammal an effective amount of a compound of formula III:

III

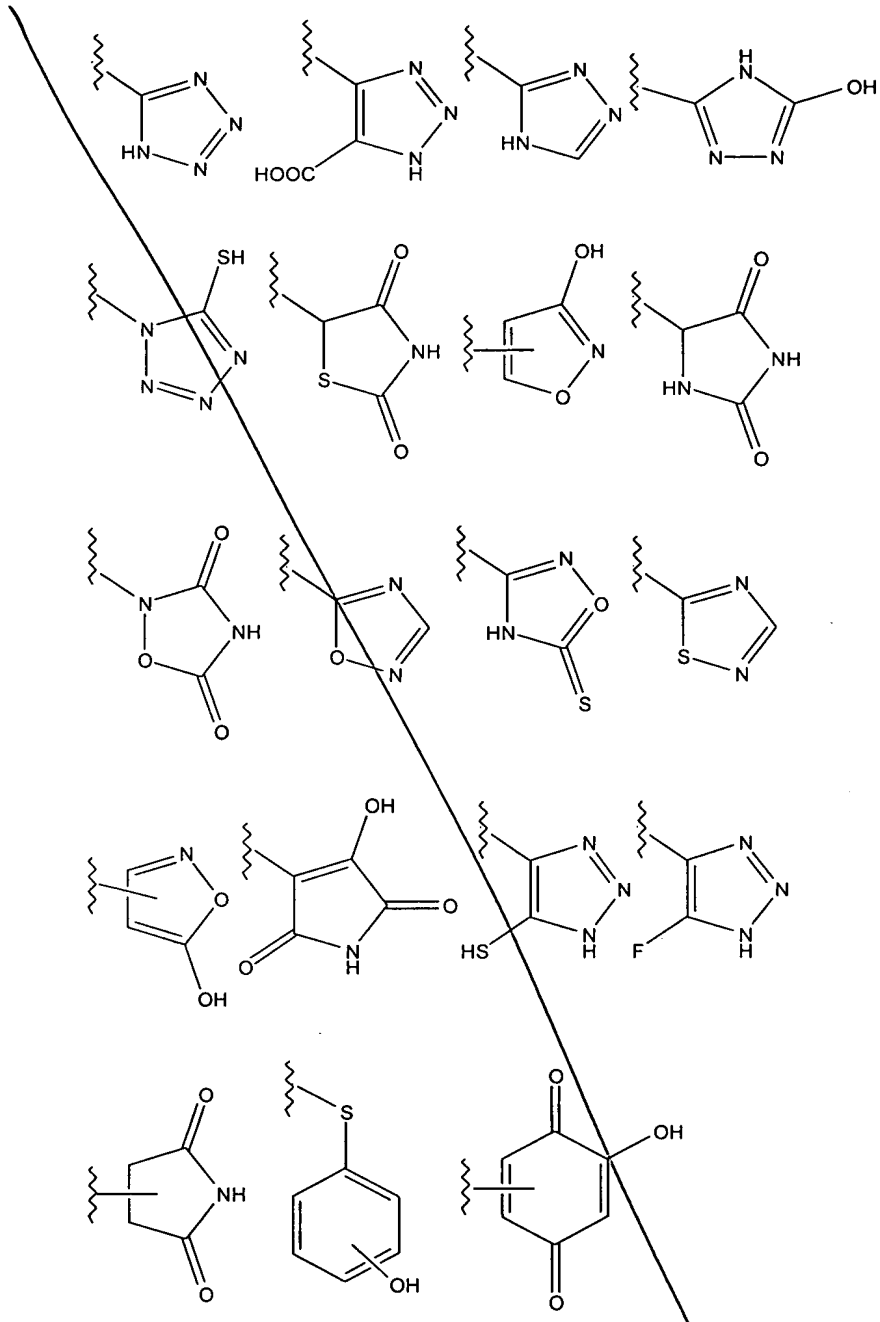


or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,

Sub C1



wherein said R_1 group is either unsubstituted or substituted with one or more substituent(s);

R and R_2 are independently C_1-C_9 alkyl, C_2-C_9 alkenyl, aryl, heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, aryl, heteroaryl, carbocycle, or heterocycle

is unsubstituted or substituted with one or more substituent(s); and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group.

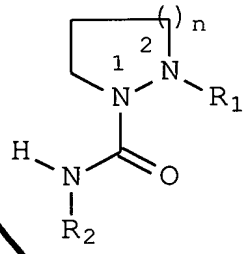
28. The method of claim 27, wherein the neuronal activity is selected from the group consisting of stimulation of damaged neurons, promotion of neuronal regeneration, prevention of neurodegeneration, and treatment of a neurological disorder.

29. The method of claim 28, wherein the neurological disorder is selected from the group consisting of peripheral neuropathy caused by physical injury or disease state, traumatic injury to the brain, physical damage to the spinal cord, stroke associated with brain damage, and a neurological

disorder relating to neurodegeneration.

30. The method of claim 29, wherein the neurological disorder relating to neurodegeneration is selected from the group consisting of Alzheimer's disease, Parkinson's disease, Huntington's disease, and amyotrophic lateral sclerosis.

31. A compound of formula IV:

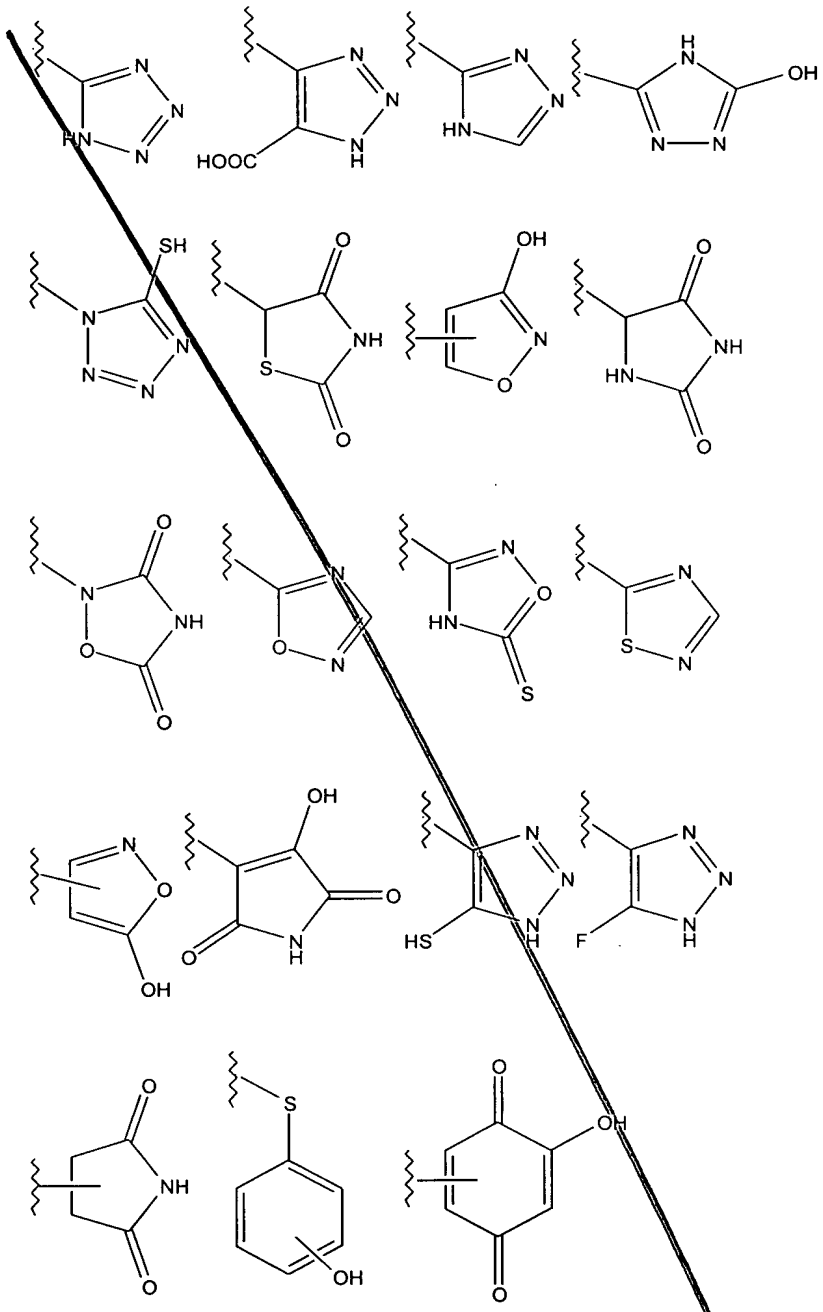


IV

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3; and

R_2 is C_1-C_9 alkyl, C_2-C_9 alkenyl, aryl, heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, aryl, heteroaryl, carbocycle, or heterocycle is substituted with one

or more substituent(s) selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group.

32. The compound of claim 31, wherein the compound is non-immunosuppressive.

33. The compound of claim 31, wherein said compound is selected from the group consisting of:

3-phenylpropyl 2-(N-cyclohexylcarbamoyl)pyrazolidine-carboxylate;

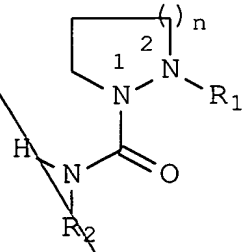
4-phenylbutyl 2-(N-cyclohexylcarbamoyl)perhydro-pyridazinecarboxylate;

1-(5-phenylpentanoyl)-2-(N-cyclohexylcarbamoyl)-tetrahydro-1H-1-pyrazole; and

pharmaceutically acceptable salts, esters and solvates thereof.

34. A pharmaceutical composition comprising:

(i) a therapeutically effective amount of a compound of formula IV:

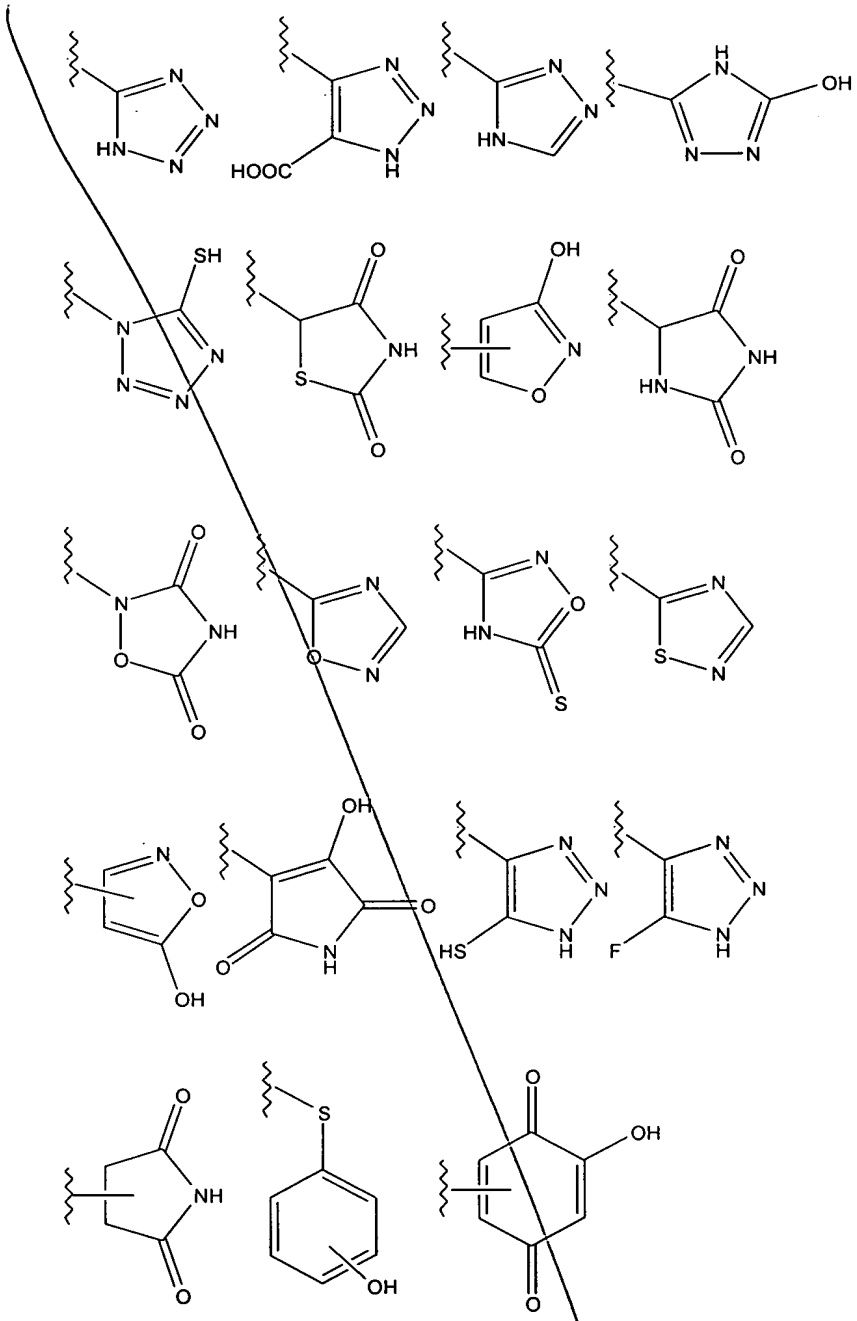


IV

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3; and

R_2 is C_1-C_9 alkyl, C_2-C_9 alkenyl, aryl, heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, aryl, heteroaryl, carbocycle, or heterocycle is substituted with one

or more substituent(s) selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group; and

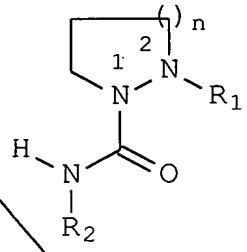
(ii) a pharmaceutically acceptable carrier.

35. The pharmaceutical composition of claim 34, further comprising an additional neurotrophic factor.

36. The pharmaceutical composition of claim 35, wherein the additional neurotrophic factor is selected from the group consisting of neurotrophic growth factor, brain derived growth factor, glial derived growth factor, cilial neutrophic factor, insulin growth factor, acidic fibroblast growth factor, basic fibroblast growth factor, platelet-derived growth factor, neurotropin-3, neurotropin-4 and neurotropin-5.

37. A method for effecting a neuronal activity in a mammal, comprising administering to the mammal an effective amount of a compound of formula IV:

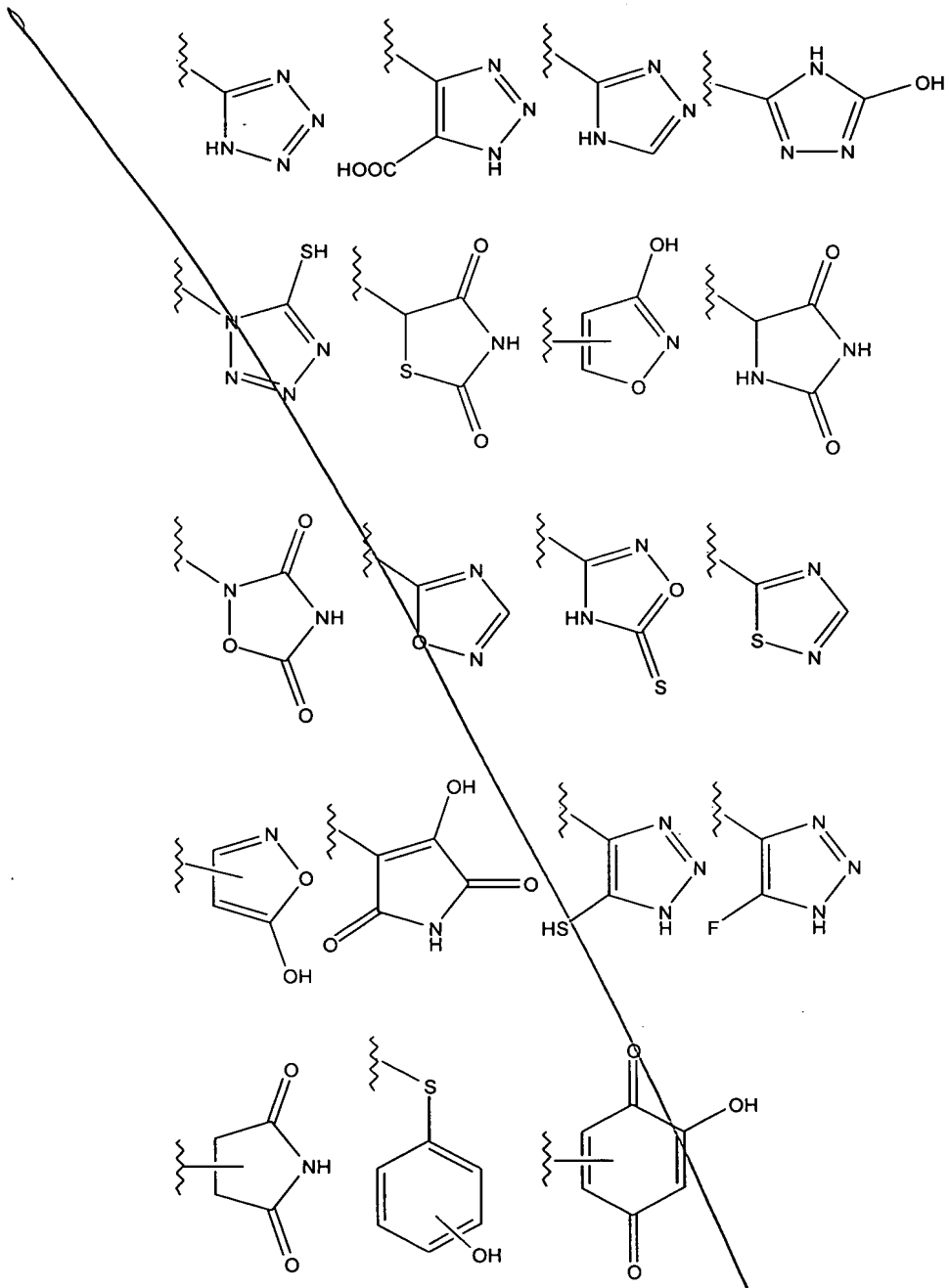
IV



or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3; and

R_2 is C_1-C_9 alkyl, C_2-C_9 alkenyl, aryl, heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, aryl, heteroaryl, carbocycle, or heterocycle is substituted with one

or more substituent(s) selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

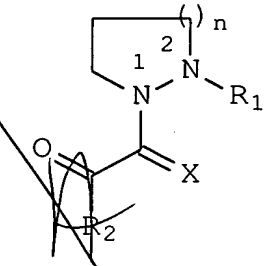
wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group.

38. The method of claim 37, wherein the neuronal activity is selected from the group consisting of stimulation of damaged neurons, promotion of neuronal regeneration, prevention of neurodegeneration and treatment of a neurological disorder.

39. The method of claim 38, wherein the neurological disorder is selected from the group consisting of peripheral neuropathy caused by physical injury or disease state, traumatic injury to the brain, physical damage to the spinal cord, stroke associated with brain damage, and a neurological disorder relating to neurodegeneration.

40. The method of claim 39, wherein the neurological disorder relating to neurodegeneration is selected from the group consisting of Alzheimer's disease, Parkinson's disease, Huntington's disease and amyotrophic lateral sclerosis.

41. A process for preparing a compound having the formula (I):

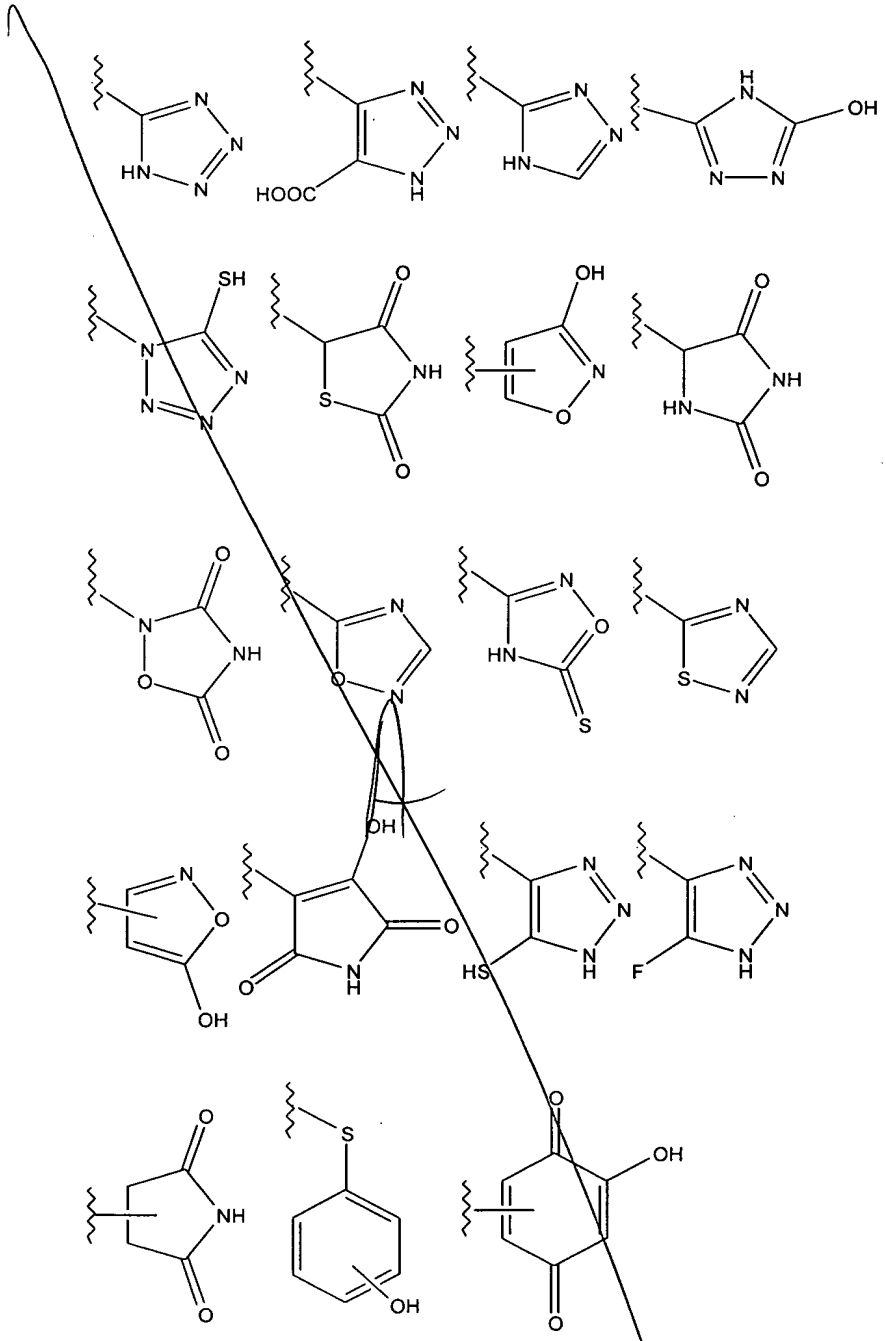


I

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R_2 is selected from the group consisting of hydrogen, C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, aryl,

heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is unsubstituted on substituted with one or more substituents selected from R_3;

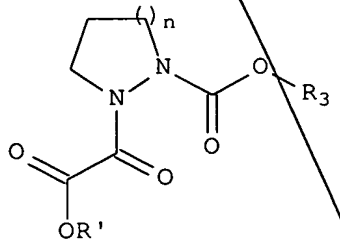
R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group; and

X is O,

which process comprises (1):

(a) reacting a compound of the formula:



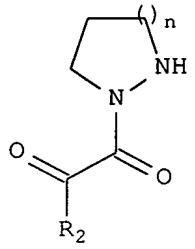
with a compound of the formula R_2-Mg-X, wherein

R′ is a straight or branched chain alkyl group which is optionally substituted in one or more positions;

X is halogen; and

n, R_3, and R_2 are as defined above; or

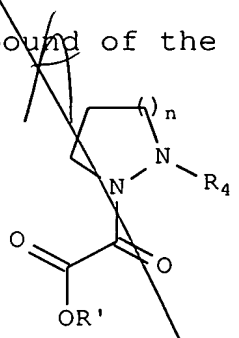
(b) reacting a compound of the formula:



with a compound of the formula R_3COOH or activated derivatives thereof, wherein

n, R_3, and R_2 are as defined above; or

(c) reacting a compound of the formula:



with a compound of the formula R_2-Mg-X, wherein

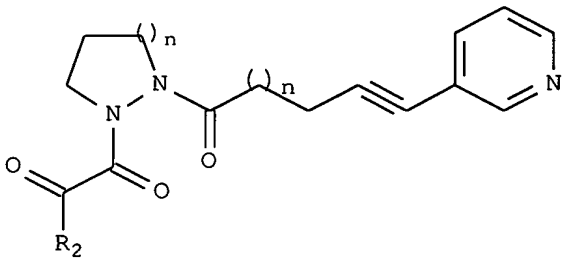
R′ is a straight or branched chain alkyl group which is optionally substituted in one or more positions;

R_4 is an alkyl group substituted with an aryl group;

X is halogen; and

n and R_2 are as defined above; or

(d) reducing a compound of the formula:



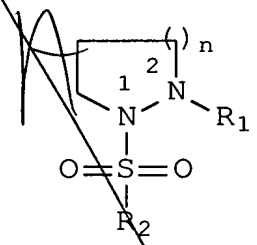
wherein

n and R_2 are as defined above,

and, if desired,

(2) removing a protecting group from the product.

42. A process for preparing a compound having the formula (II):

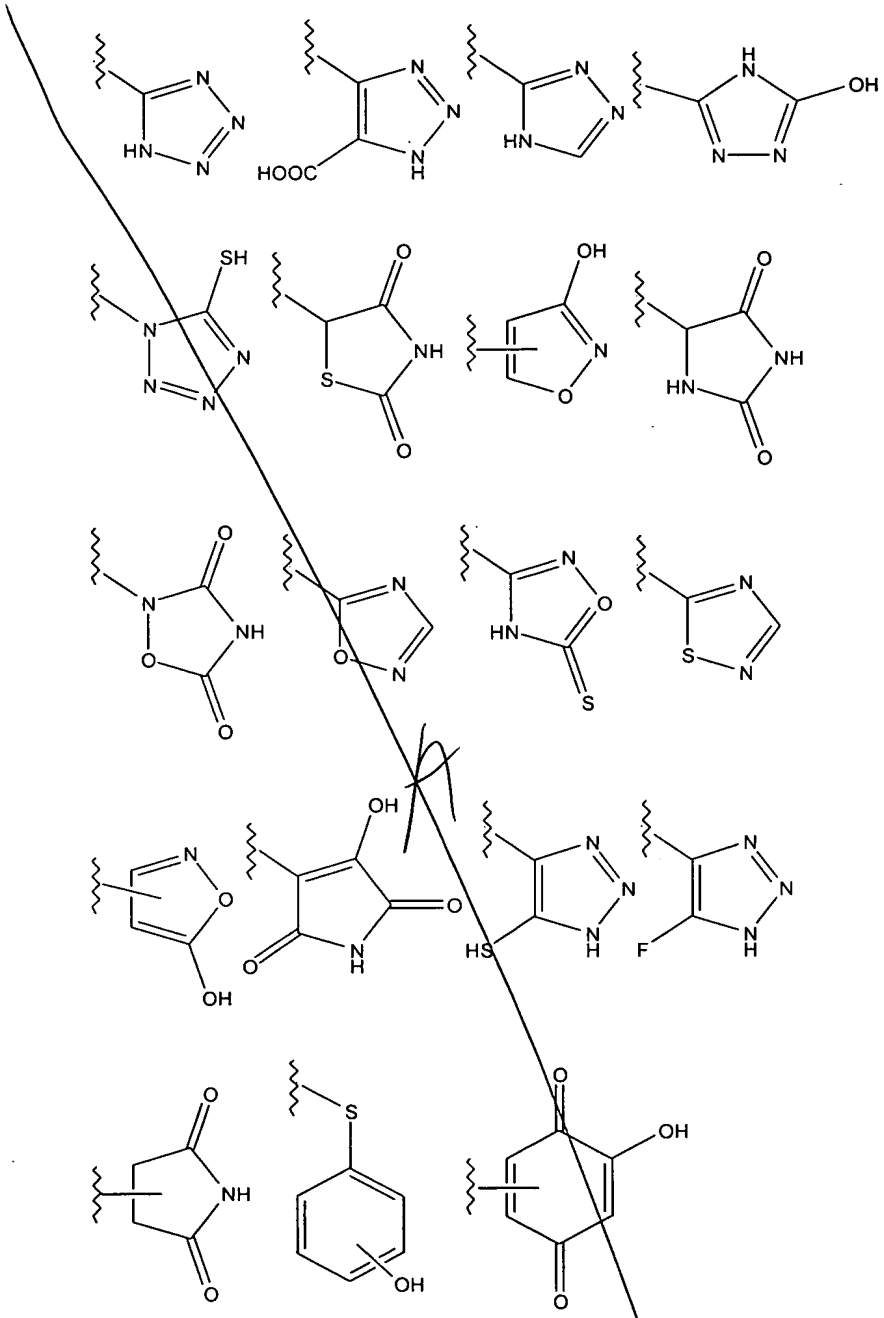


II

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3;

R_2 is selected from the group consisting of hydrogen, C_1-C_9 straight or branched chain alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, aryl,

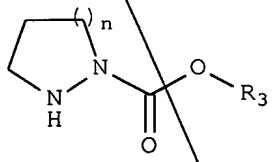
heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, alkynyl, aryl, heteroaryl, carbocycle, or heterocycle is unsubstituted or substituted with one or more substituents selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

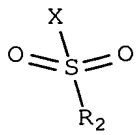
wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group,

which process comprises (1):

reacting a compound of the formula:



with a compound of the formula:



wherein

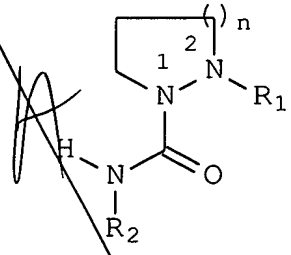
X is halogen; and

n, R_3, and R_2 are as defined above,

and, if desired,

(2) removing a protecting group from the product.

43. A process for preparing a compound having the formula (IV):

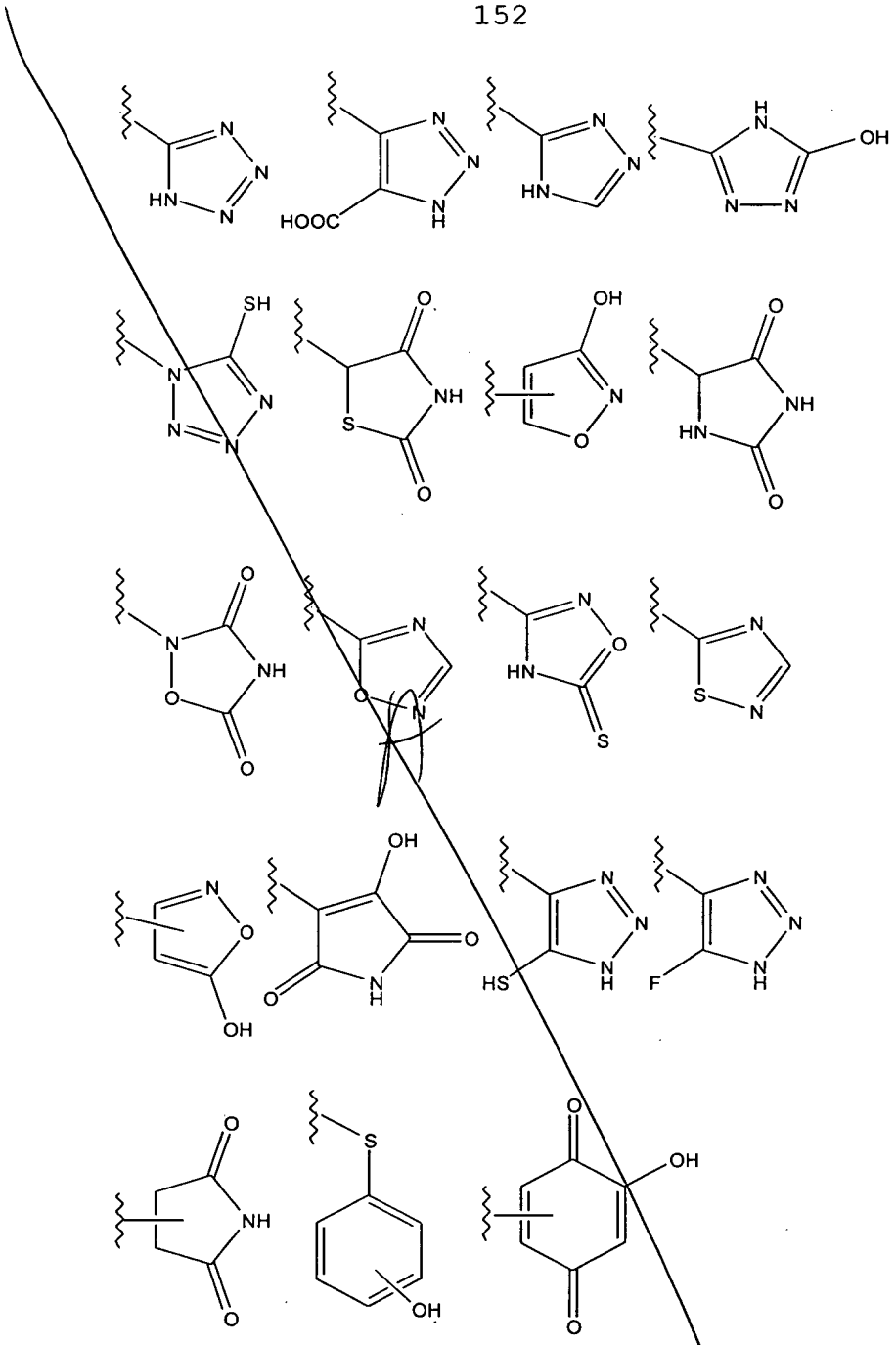


IV

or a pharmaceutically acceptable salt, ester or solvate thereof, wherein:

n is 1-3;

R_1 is selected from the group consisting of $-CR_3$, $-COOR_3$, $-COR_3$, $-COOH$, $-SO_3H$, $-SO_2HNR_3$, $-PO_2(R_3)_2$, $-CN$, $-PO_3(R_3)_2$, $-OR_3$, $-SR_3$, $-NHCOR_3$, $-N(R_3)_2$, $-CON(R_3)_2$, $-CONH(O)R_3$, $-CONHNHSO_2R_3$, $-COHNSO_2R_3$, $-CONR_3CN$,



wherein said R_1 group is either unsubstituted or additionally substituted with R_3; and

R_2 is C_1-C_9 alkyl, C_2-C_9 alkenyl, aryl, heteroaryl, carbocycle, or heterocycle, wherein said alkyl, alkenyl, aryl, heteroaryl, carbocycle, or heterocycle is substituted with one

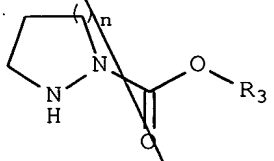
or more substituent(s) selected from R_3; and

R_3 is selected from the group consisting of hydrogen, C_1-C_9 alkyl, C_2-C_9 straight or branched chain alkenyl, C_2-C_9 straight or branched chain alkynyl, C_1-C_9 alkoxy, C_2-C_9 alkenyloxy, aryloxy, phenoxy, benzyloxy, hydroxy, carboxy, C_1-C_9 thioalkyl, C_2-C_9 thioalkenyl, C_1-C_9 alkylamino, C_2-C_9 alkenylamino, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, and heterocycle,

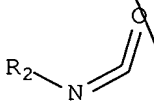
wherein said alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, aryloxy, thioalkyl, thioalkenyl, alkylamino, alkenylamino, aryl, heteroaryl, carbocycle, or heterocycle group is optionally substituted with a hydroxy, carboxy, carbonyl, cyano, nitro, imino, sulfonyl, thiocarbonyl, sulfhydryl, halo, haloalkyl, trifluoromethyl, aryl, heteroaryl, carbocycle, or heterocycle group,

which process comprises (1):

reacting a compound of the formula:



with a compound of the formula:



wherein

n, R_3, and R_2 are as defined above,

and, if desired,

(2) removing a protecting group from the product.

add
A4